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MARINE TURBELLARIA FROM THE ATLANTIC COAST OF NORTH AMERICA

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Accumulated material of marine flat-worms from our Atlantic coast, chiefly the coast of Maine and Newfoundland, has furnished the occasion for this paper. The larger marine Turbellaria of our Atlantic coast are probably now fairly well known, but very much remains to be done on the small and minute forms.

ORDER ACOELA

FAMILY PROPORIDAE

AFRONTA, NEW GENUS

DEFINITION: Proporidae without frontal pore or cluster of frontal glands and without accessory female parts; mouth behind middle, pharynx short; single genital pore, male, at rear end; penis simple, without papilla.

TYPE: *Afronta aurantiaca*.

Afronta aurantiaca, new species

Figures 1-3

MATERIAL: One specimen, sectioned.

FORM: Cylindroid, rounded at both ends, 2 mm. long (fig. 1).

COLOR: Orange yellow, whitish at ends, dorsal surface with short elongated clumps of brownish granules.

EYES: Lacking.

GENERAL STRUCTURE: Although the fixation (hot Flemming's strong solution) is excellent, the plane of the sections is unfortunate, being obliquely horizontal, slanting from left to right so that on any section, right-hand structures are more dorsal than left-hand ones. Further, a piece has been sliced off the posterior dorsal region, apparently in trimming the block. These circumstances have detracted from a proper study of the specimen.

Epidermis completely ciliated (cilia did

not preserve), apparently cellular, although cell walls are distinguishable with difficulty from the striated appearance common to acoel epidermis. As is usual among the Acoela, the epidermis is divided by an apparently fibrous membrane into a narrow border containing the basal bodies of the cilia and a broader inner stratum containing the nuclei (fig. 2). Rhabdites seen in living worm, but not apparent on sections. Epidermis contains clear spaces, somewhat more numerous anteriorly, continuity of these spaces with clear channels in mesenchyme plainly seen (fig. 2). These channels seem to lead to the mesenchymal vacuoles. No epidermal gland cells found. No cluster of frontal glands or frontal pore present. Whether isolated frontal glands exist or not could not be determined with certainty. A few bluish masses (haematoxylin stain) occur behind the brain that might be frontal glands, but they did not show any definite structure and could not be traced to the anterior end. Epidermis lacks basement membrane; is bounded from mesenchyme by definite muscle layer of outer circular and inner longitudinal fibers (figs. 2 and 3).

Mesenchyme has usual appearance—a granular vacuolated syncytium (fig. 3); large spaces occur around penis, smaller but still conspicuous ones in the peripheral mesenchyme, and quite small spaces in the central mesenchyme. Numerous nuclei in the peripheral, few in the central, mesenchyme. Parenchymal muscle fibers present, forming a lattice of longitudinal and transverse fibers (fig. 3).

Brain well developed (fig. 3), more or less quadripartite, sending two main bundles and some smaller ones forward, and two main bundles together with many other fibers backward. Statocyst present in

posterior dorsal part of brain, fusiform, divided into three compartments, of which central one contains the statolith (fig. 3).

Mouth well behind middle (fig. 3), leads into short pharynx that is simply inturned epidermis, not differentiated in any way.

REPRODUCTIVE SYSTEM: Simple; gonads consist of paired strands of gametogonia, testes lateral and dorsal to ovaries. No accessory female parts found. Indefinite sperm ducts lead to cap-like seminal vesicle closely applied over anterior surface of penis (fig. 3). Penis consists of rounded mass at posterior end of worm; non-muscular but contains many nuclei. Long narrow lumen opens internally into seminal vesicle, externally by male gonopore at posterior end of worm (fig. 3); lumen lined by hardened material; no penis papilla seen. Sperm appear to be of short thick shape.

LOCALITY: Mt. Desert Island, Maine, dredged in surface mud at a depth of 30 feet, near the Mt. Desert Island Biological Laboratory, August 16, 1937.

TYPE: One set of serial sections (one slide) deposited in A.M.N.H., Cat. No. 339.

REMARKS: This is the specimen mentioned in my 1938 report as a species of *Plagiostomum*. Sections showed the animal to be an acoel, not an alloecoel. A new genus appeared to be necessitated by the lack of frontal glands, lack of differentiated pharynx, and simple tubular penis without papilla.

ECTOCOTYLIDAE, NEW FAMILY

DEFINITION: Acoela of ectocommensal habits, with tubular plicate pharynx, and caudal adhesive disk.

ECTOCOTYLA, NEW GENUS

DEFINITION: Ectocotylidae with armed penis, seminal bursa with one nozzle, and two genital pores.

TYPE: *Ectocotyla paguri*.

Ectocotyla paguri, new species

Figures 4-8

MATERIAL: Number of specimens sent by Dr. E. G. Reinhard.

FORM: Fusiform, curved, middle part

plump, ends narrowed, posterior end terminates in adhesive disk, less than 1 mm. long (figs. 4-7).

COLOR: White; interior yellow during sexual maturity.

EYES: Lacking.

GENERAL STRUCTURE: Four specimens were sectioned, and although the sections are fairly good, some details could not be determined. Body is completely ciliated according to Dr. Reinhard's observations on living specimens; cilia were lacking on preserved animals. Body lacks typical epidermis; is clothed with a narrow, apparently structureless membrane (fig. 8) of firm, elastic nature, thrown into folds wherever contraction occurs. Presumably epidermis is, therefore, of the "insunk" type, common among Acoela, in which the nuclei are sunk into the mesenchyme. No trace of frontal glands. Anterior tip contains elongated eosinophilous structures, probably rhammites (fig. 8); no rhabdites found. Rear end forms circular adhesive disk covered with adhesive papillae (fig. 8), to which could be traced eosinophilous strands in underlying mesenchyme, presumably outlets of eosinophilous gland cells, but not clearly distinct from muscle fibers, also eosinophilous. Epidermal membrane has sharp inner boundary, just inside which is subepidermal musculature, chiefly of longitudinal fibers; circular fibers were not definitely seen. Longitudinal muscle layer gradually increases in thickness towards posterior end and is well developed in connection with adhesive disk.

Mesenchyme consists of loose granular material, containing scattered nuclei, more abundant ventrally. No mesenchymal muscle fibers seen.

Well-developed brain present just anterior to pharynx; consists of oval mass, granular in center, encircled by nerve cells (fig. 8); no definite nerve strands seen. Statocyst embedded in anterior surface of brain.

PHARYNX: Is unique among the Acoela in being of the plicate, protrusible type, similar to that of planarians. When protruded was seen to be covered with cilia and to be armed with a few spines (fig. 4),

according to observations of Dr. Reinhard on living specimens; spines were not seen in sections. Pharynx lies in pharyngeal cavity opening by mouth anterior to middle of body (fig. 8), shortly behind brain. Pharyngeal cavity and outer and inner surfaces of pharynx lined by same structureless membrane as general body surface. Under epidermis, thin layer of longitudinal muscle fibers; interior of pharynx consists of mesenchyme with nuclei, concentrated near the surfaces; along center of mesenchyme eosinophilous strands occur, probably pharyngeal glands, seeming to open at distal end of pharynx. Pharynx leads directly into mesenchyme.

REPRODUCTIVE SYSTEM: What were presumed to be testes consist of several compact groups of spermatogonia in latero-ventral regions (fig. 8). No ovaries or ovogonia were found but all specimens contain in ventral part of plump central body region, round deeply staining masses, each lodged in a mesenchymal compartment bounded by fibers. These masses appear to be syncytia, composed of areas with small nuclei and other areas of larger nuclei. It is presumed that these masses are embryos and hence that the animal is viviparous. Separate male and female gonopores present. Male gonopore in front of stalk-like posterior end; leads into tubular cavity whose inner end contains the penis. Penis consists of oval thick-walled sac armed with curved, hook-like stylet. No seminal vesicle or channels leading to the penis were found but behind the penis is some eosinophilous material, probably glands associated with the male system. Female gonopore shortly anterior to male gonopore (fig. 8). Leads into rounded cavity with muscular wall in which is lodged the seminal bursa, a rounded mass with muscular wall, provided with one nozzle (mouthpiece). Exact relation of bursa to its cavity could not be determined—bursa probably attached to wall of cavity by the nozzle.

HABITS: Ectocommensal on the surface of the hermit crab, *Pagurus pubescens*. Active, lively, moving rapidly about in measuring-worm fashion (fig. 7), alternately attaching anterior end and adhesive disk.

LOCALITY: Biological station of the University of Maine, Ellsworth, Maine, epizoic on *Pagurus pubescens*, collected August, 1940, by Dr. E. G. Reinhard.

COTYPES: Several specimens mounted whole (one slide) and set of sections (one slide), A.M.N.H., Cat. Nos. 340, 341.

REMARKS: This animal is remarkable in several ways: in the possession of a plicate pharynx, hitherto unknown among the Acoela, in the presence of a caudal adhesive disk, also not previously found in the order, and in its ectocommensal habits. This appears to be the first ectocommensal acoel found, although several entocommensals are known, inhabiting the interior of echinoderms.

ORDER ALLOEOCOELA

FAMILY PLAGIOSTOMIDAE

Plagiostomum album Hyman, 1938

Figures 9-11

MATERIAL: Several specimens collected in tidal zone on shores of Mt. Desert Island, Maine.

FORM: Plump, cylindroid, to 4 mm. long (fig. 9), anterior end slightly narrowed, blunt, posterior end forming a little tail or at times or in larger specimens rounded or indented.

COLOR: White with a black spot between, and in front of, the eyes and a delicate lacing of brown lines over the dorsal surface.

EYES: Four, in a trapezoid arrangement (fig. 9).

GENERAL STRUCTURE: My own serial sections have been supplemented by others kindly lent by Dr. Ulric Dahlgren. Body clothed in a ciliated epidermis, of low columnar form, taller at the two ends, especially the posterior end, than elsewhere. Whether the epidermis is cellular or not could not be determined. It contained no special structures. Definite basement membrane present underlain by usual sub-epidermal muscle layer of outer circular and inner longitudinal fibers; diagonal fibers appeared to be absent. Muscle layer gradually increases in thickness towards posterior end. No frontal pore or cluster of frontal glands present; some

large cyanophilous gland cells occur in the sides of the anterior end. Mesenchyme compact; parenchymal muscle fibers are present in fair numbers. The material was not favorable for a detailed study of the nervous or excretory systems. No indications of the latter system were found.

DIGESTIVE SYSTEM: Subterminal mouth opens into wide pharyngeal cavity, containing free distal end of very large pharynx, which in life equals about one-fourth the body in length. Pharynx of *variabilis textus* type, in which outer muscular wall consists of outer circular and inner longitudinal fibers, while inner muscle layer next the lumen is reversed with outer longitudinal and inner circular fibers (fig. 10). Strong radial fibers course between inner and outer walls of pharynx. Powerful sphincter muscle occurs near distal end of pharynx. Well-developed nervous stratum is situated to inner side of outer muscle layers, but no definite nerve ring noticed. Pharynx leads by brief narrowed esophagus into sacciform intestine, which has peculiarity of extending forward around proximal end of pharynx (fig. 9). Intestine consists of thick, highly vacuolated, apparently syncytial epithelium underlain by a delicate layer of circular muscle fibers.

REPRODUCTIVE SYSTEM: Testes are a pair of elongated masses in lateral body regions to either side of the rear part of the pharynx and anterior part of the intestine. Ovaries are a pair of rounded bodies posterior to the testes. No ducts were found leading from the gonads to the copulatory apparatus, except that the distal end of the common ovovitelline duct was seen entering the roof of the male antrum in the sagittal series of sections (fig. 10). Sagittal section of copulatory apparatus shown in figure 10; frontal view of apparatus from more mature specimen cut horizontally, from sections lent by Dr. Dahlgren, shown in figure 11. In the latter series the common ovovitelline duct could not be found. This duct constitutes the entire female part of the apparatus. Male apparatus complicated, beginning with elongated seminal vesicle placed longitudinally and ventrally. Posterior end of this curves and enters pyriform prostatic vesicle, directed forward;

this has lumen in less mature specimen (fig. 10), but is filled with prisms of secretion in mature specimen (fig. 11). Prostatic vesicle is covered with thick layer of prostatic glands. Distal end of prostatic vesicle narrows, curves posteriorly, enters proximal end of long canal-like penis bulb containing the introverted penis papilla. Wall of penis bulb consists of epithelium underlain by muscle layer of inner circular and outer longitudinal fibers. Penis papilla very long and slender composed of two epithelia with strong longitudinal muscle fibers between. Mass of unicellular glands embraces base of penis papilla and enters with longitudinal muscle fibers. Base of penis papilla continuous with conical protuberance, usually termed penis sheath, that projects posteriorly into proximal end of genital antrum. Penis sheath has construction similar to wall of penis bulb and of antrum and receives some unicellular glands. Genital antrum consists of widened anterior part that bears penis sheath at its proximal end and receives oviduct into dorsal wall; and of narrowed distal part that leads to common genital pore at rear end of body. This narrowed part receives on each side bundle of long-necked unicellular glands, and from its proximal end there projects ventrally a rounded, thick-walled blind sac of unknown purpose. This sac seems to contain in its anterior wall some glandular masses, but this could not be determined precisely. Wall of antrum consists of epithelium, then circular, then longitudinal muscle fibers; its narrowed distal part and also the lining of the blind sac are ciliated.

DIFFERENTIAL DIAGNOSIS: *P. album* differs from other members of the genus in the combination of long pharynx, forward projection of intestine around inner end of pharynx, very elongated form of penis bulb, penis papilla, and common antrum, and blind ventral sac of antrum. *P. album* considerably resembles both in external characters and details of the copulatory apparatus the common European freshwater *P. lemani*.

LOCALITY: Mt. Desert Island, Maine, under stones in the tidal zone.

TYPE: One set of sagittal serial sections

(one slide) deposited in A.M.N.H., Cat. No. 338.

ORDER TRICLADIDA
SUBORDER MARICOLA
FAMILY PROCERODIDAE
Subfamily Procerodinae

GENUS *PROCERODES* GIRARD, 1850

Procerodes littoralis (Ström), 1768

Syn.: *Hirudo littoralis* Ström, 1768.
Planaria littoralis O. F. Müller, 1776.
Planaria ulvae Oersted, 1843.
Procerodes Wheatlandii Girard, 1850.
Planaria frequens Leidy, 1855.
Procerodes ulvae Verrill, 1893.

A number of specimens which I assign to this species were presented to me by Dr. A. S. Pearse who collected them at Brigus, Newfoundland, August 16, 1938. There is scarcely any species of turbellarian regarding which there has been more taxonomic confusion than this one. Wilhelmi (1909) in his monograph failed to clear up the confusion, and it has remained for Bock (1926) to settle the matter finally. Further synonymy will be found in these two references, together with a discussion of the taxonomic history of the form. I accept the conclusion of Bock that *Planaria littoralis* and *Procerodes ulvae* are identical, and that the valid name is *Procerodes littoralis* (Ström). This species then evidently occurs along the northern shore of the North Atlantic from Newfoundland to Scandinavia. It remains for me to consider whether *Procerodes Wheatlandii* is conspecific with *Procerodes littoralis* (= *ulvae*). Wilhelmi (1907, 1909) maintains that they are not but gives no grounds for this opinion except that he has studied material from their respective localities. Comparison of his figures of the entire animal (1909, pl. 1, figs. 17 and 19) and of the sagittal section of the copulatory apparatus (1909, pl. 15, fig. 13, and pl. 16, fig. 9) clearly shows that there is no difference between his *P. ulvae* and *P. Wheatlandii* except the larger size of the copulatory bursa in the former. I, too, have studied alive and as whole mounts and serial sections specimens of *Procerodes*

Wheatlandii from the Massachusetts coast, and I have compared them with the Newfoundland specimens that I consider to be *P. littoralis* (= *ulvae*). I am not able to see any difference between these forms, except that the Massachusetts specimens are smaller than the Newfoundland ones and that they have a smaller copulatory bursa. These are not adequate grounds for a specific distinction. I am, therefore, of the opinion that the Massachusetts form called since Wilhelmi's monograph *Procerodes Wheatlandii* is conspecific with the European *P. littoralis* (= *ulvae*) or at best is but a geographic race or variety of the latter. The smaller size of the Massachusetts specimens may be merely of ecological nature, an illustration of the general rule that animals increase in size towards the poles.

Procerodes Warrenii (Girard), 1850

Syn.: *Vortex Warrenii* Girard, 1850.
Fovia Warrenii Girard, 1852.

A yellowish gray marine triclad with truncate anterior end devoid of auricles is common along the shores of Mt. Desert Island, Maine, under rocks in the tide zone. It appears probable to me that this is *Procerodes Warrenii*, although certain identification was impossible as no sexual specimens were found. This species appears to be seldom taken in the sexual state. What is known about it is given in Wilhelmi's monograph (1909).

GENUS *FOVIELLA* BOCK, 1925

Foviella affinis (Oersted), 1843

Syn.: *Planaria affinis* Oersted, 1843.
Fovia affinis Stimpson, 1857.
Fovia affinis Jensen, 1878.
Planaria littoralis Van Beneden, 1860.
Fovia affinis Jensen, 1878.

A number of specimens which I assign to this species were collected by Dr. A. S. Pearse at Brigus, Newfoundland, August 16, 1938, and turned over to me. The taxonomic history of this species is also very complicated and has been reviewed by Bock, 1925, who has given a good description of the species for which he created the name *Foviella*. I found no differences between my specimens and Bock's de-

scription. This species, like *Procerodes littoralis*, therefore, ranges along the North Atlantic coast from Scandinavia to Newfoundland.

PROBURSIDAE, NEW FAMILY

DEFINITION: Maricola with copulatory bursa anterior to the penis bulb and with posterior ovaries, situated at the level of the posterior end of the pharynx.

PROBURSA, NEW GENUS

DEFINITION: With the characters of the family.

TYPE: *Probursa veneris*.

Probursa veneris, new species

Figures 12, 13

MATERIAL: Several whole mounts and sets of serial sections presented by Dr. Marvin Meyer.

FORM: Preserved specimens of elongated oval shape (fig. 12), presumably more elongated and slender in life, to 3 mm. long; auricles not evident on whole mounts but stated by Dr. Meyer to be present.

COLOR: Brownish black, flecked and streaked.

EYES: Usual two, somewhat back from anterior end as usual in Maricola.

GENERAL STRUCTURE: A few points may be mentioned. Digestive tract sends median branch forward in front of eyes (fig. 12); posterior rami of digestive tract are confluent at posterior end. Ventral nerve cords have strong cross connection below the penis bulb; they are also confluent at the posterior end.

REPRODUCTIVE SYSTEM: Large testes, about seven to nine on each side, occur as usual between bases of digestive branches (fig. 12); they fill space from ventral nerve cords to dorsal epidermis. First pair is close behind eyes; last pair about level of copulatory bursa (fig. 12). Sperm ducts form spermiducal vesicles ventral to copulatory bursa, unite to common sperm duct that enters middle of penis bulb. Ovaries are a pair of rounded bodies to either side at level of posterior end of pharyngeal

chamber. Oviduct leaves postero-lateral surface of each ovary, proceeds posteriorly lateral to ventral nerve cord, at level of genital antrum curves inward and dorsally and, accompanied by eosinophilous glands, enters the bursal canal on that side about where bursal canal joins genital antrum. Large copulatory bursa of irregular rounded form lies anterior to penis bulb as in fresh-water triclads; bursal canal leaves center of posterior surface of bursa; is very narrow at first, proceeds posteriorly above penis and, widening gradually, curves ventrally, receiving the two oviducts separately on each side, and enters common antrum. Penis consists of large, very muscular bulb placed immediately behind copulatory bursa and elongated penis papilla. Bulbar lumen is lined by wavy glandular epithelium. Common gonopore occurs below penis papilla. Glands open on ventral surface behind gonopore. Sagittal view of copulatory complex shown in figure 13.

LOCALITY: Fire Island, which is a sand bar on the Atlantic Ocean side of Long Island, New York, near the western end of the latter. Habitually found in empty shells of the clam *Venus*, whence the specific name. Collected September 4, 1940, by Dr. Marvin Meyer.

TYPE: One whole mount, deposited in A.M.N.H., Cat. No. 328; cotype, one set of serial sections (four slides), A.M.N.H., Cat. Nos. 329-332.

REMARKS: This triclad has two remarkable features in which it differs from all known Maricola: the posterior position of the ovaries and the location of the copulatory bursa anterior to the penis bulb. Although some Maricola are known in which the copulatory bursa curves forward so as to lie above the penis papilla, none is known in which the bursa is situated anterior to the penis bulb except the present species. This location of the bursa is identical with the location characteristic of fresh-water triclads. Throughout the triclads the ovaries are situated anteriorly, shortly behind the eyes, and although they may be somewhat more posterior than this in some Maricola, in no other known triclad do they occur so far posteriorly as in *Probursa veneris*.

ORDER POLYCLADIDA
SUBORDER ACOTYLEA
SECTION CRASPEDOMMATA
FAMILY CRYPTOCELIDAE

COMPROSTATUM, NEW GENUS

DEFINITION: Cryptocelidae with tentacular and cerebral eye clusters, anteriorly located pharynx, interpolated prostatic vesicle, and large Lang's vesicle.

TYPE: *Comprostatum insularis*.

Comprostatum insularis, new species

Figures 14-16

MATERIAL: Several preserved and live specimens sent by Dr. H. Humm.

FORM: Slender, elongate, sides parallel, both ends rounded (fig. 14), to 40 mm. long in life, about six times as long as wide.

COLOR: White with pink tinge, may have pink spots; pink color probably result of ingested food.

EYES: Marginal band of very small eyes, fades out posteriorly, so that posterior end lacks marginal eyes (fig. 14). Tentacular eye clusters occur behind level of the brain, consist of four or five to about eight eyes, depending on size of specimen. Brain has exceedingly large "granule masses." Cerebral eyes consist of elongated group on each side, beginning behind the brain and extending forward above brain and granule masses as a few widely spaced eyes to a level less than halfway the distance to the anterior margin (fig. 15). There are no frontal eyes as in other cryptocelids.

DIGESTIVE SYSTEM: Short, ruffled, rounded, or oval pharynx occurs well anterior to the middle. From it main intestine extends forward to brain giving off numerous lateral branches (fig. 14). In some specimens, main intestine also extends short distance behind pharynx; in other specimens this was lacking.

COPULATORY APPARATUS: Male apparatus, directed backward, lies about middle of body, some little distance behind the pharynx (fig. 14). Female apparatus behind male apparatus; separate gonopores. Sperm ducts become visible along-side pharynx; proceed posteriorly, widening into irregular, very thin-walled spermi-

ducal vesicles, packed with sperm. These turn anteriorly about level of middle of prostatic vesicle and, running ventral to this vesicle, enter separately the posterior angles of the seminal vesicle. Latter is muscular, thick-walled, arched body, curving dorsally, then bending posteriorly, and by narrowed connection entering anterior end of large, elongated prostatic vesicle. Prostatic vesicle has thick muscular wall, is lined by tall, wavy, glandular epithelium, from which come blobs of secretion filling the lumen. Posterior end of prostatic vesicle narrows, passes directly into large, elongated penis papilla, which may be bent forward in some specimens. Penis papilla has muscular outer and inner walls of outer longitudinal and inner circular muscle fibers. Penis papilla lies in male antrum, opening below by male gonopore by way of narrowed channel.

Female gonopore, well separated from male gonopore, leads into forward-slanting passage having strong sphincter muscle (fig. 16). This opens proximally into expanded thin-walled vagina which makes an S-curve posteriorly and dorsally, becoming very thick walled with less wide lumen. Vagina then curves posteriorly, and after receiving in its ventral wall the common oviduct it narrows to form the stalk of Lang's vesicle. This stalk after a short posterior course enters the very large and elongated Lang's vesicle. The vagina appears to be ciliated throughout.

LOCALITY: Key Largo, Florida, under rocks in shallow water, fairly common, probably generally distributed throughout the Florida keys, collected in 1940 by Mr. Harold Humm; live specimens were sent in two shipments in January, 1944.

TYPE: One whole mount, A.M.N.H., Cat. No. 333; sexual region of the same removed and sectioned, four slides, A.M.N.H., Cat. Nos. 334-337.

SECTION SCHEMATOMMATA

FAMILY HOPLOPLANIDAE

Hoploplana inquilina (Wheeler), 1894

In my article on the Atlantic coast polyclads of the United States, 1940, I left open

the question whether this species occurs, as claimed by Pearse, 1938, in two forms, the larger nominal form found on the Massachusetts coast commensal with the snail *Busycon*, and a smaller form, *thaisana*, found southward, commensal in the snail *Thais*. Additional information on this question has been furnished by Dr. Leslie Stauber, 1941, and Dr. Victor Schechter, 1943, both of whom have kindly sent specimens. Stauber reports the finding of considerable numbers of *H. inquilina* in the snail *Urosalpinx cinerea* Say in Delaware Bay. They were not found in *Busycon* in this locality. The largest of Stauber's specimens measure 5 by 3 mm., and most range from 1-3 mm. Hence, Stauber's

data confirm the claim of Pearse that a smaller form of this species exists along the more southern part of our Atlantic coast. Schechter found *H. inquilina* in the snail *Thais floridana haysae* Clench in Barataria Bay, Louisiana. These specimens are much larger than any previous specimens recorded, measuring up to 8 by 5 mm. The variety of *Thais* is also larger than *Thais floridana floridana* in which Pearse found his specimens of *Hoploplana "thaisana."* The present indications, therefore, are that there is but one form of *Hoploplana inquilina* upon our coast and that its size varies with the size of the host and probably other environmental circumstances.

SUMMARY

1. Two new acoels, one new allocoel, one new marine triclad, and one new polyclad are described from the Atlantic coast of North America.

2. The acoels are *Afronta aurantiaca*, family Proporidae, and *Ectocotyla paguri*, new family Ectocotylidae, both from the Mt. Desert Island region, Maine. The former lacks frontal glands and accessory female structures. The latter is one of the most remarkable acoels yet discovered, having a protrusible plicate pharynx and caudal adhesive disk provided with adhesive papillae; it also appears to be viviparous. It is epizoic on the hermit crab *Pagurus pubescens*.

3. *Plagiostomum album*, also from the Mt. Desert Island region, is described.

4. The marine triclads *Procerodes lit-*

toralis (Ström), 1768 (= *Procerodes ulvae*), and *Foviella affinis* (Oersted), 1925, are reported from Brigus, Newfoundland; hence these species are distributed in the North Atlantic from Newfoundland to Scandinavia. *Procerodes Wheatlandii* Girard, 1850, found on the Massachusetts coast, is considered to be at best a geographic variant of *P. littoralis*.

5. A new marine triclad, *Probursa veneris*, new family Probursidae, shores of Long Island, New York, differs from all known triclads in the far posterior position of the ovaries and differs from all other marine triclads in having the copulatory bursa situated anterior to the penis bulb.

6. A new polyclad, *Comprostatum insularis*, family Cryptocelidae, is described from the Florida keys.

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References prior to 1909 will be found in Wilhelm, 1909.

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FOR ALL FIGURES

1, epidermis; 2, brain; 3, statocyst; 4, testes; 5, ovaries; 6, mouth; 7, seminal vesicle; 8, penis; 9, male gonopore; 10, basal bodies of cilia; 11, epidermal nucleus; 12, mesenchymal nuclei; 13, channels; 14, adhesive disk; 15, rhammites; 16, pharynx; 17, pharyngeal cavity; 18, embryos; 19, seminal bursa; 20, female gonopore; 21, penis stylet; 22, adhesive papillae; 23, eyes; 24, intestine; 25, sphincter; 26, prostatic vesicle; 27, penis bulb; 28, penis sheath; 29, ovovitell-

line duct; 30, male antrum; 31, common gonopore; 32, prostatic glands; 33, penis glands; 34, blind sac; 35, common antrum; 36, copulatory bursa; 37, bursal canal; 38, common sperm duct; 39, bulbar lumen; 40, cerebral eyes; 41, tentacular eyes; 42, marginal eyes; 43, main intestine; 44, sperm ducts; 45, Lang's vesicle; 46, penis papilla; 47, vagina; 48, common oviduct; 49, stalk of Lang's vesicle; 50, penis papilla; 51, granule mass.

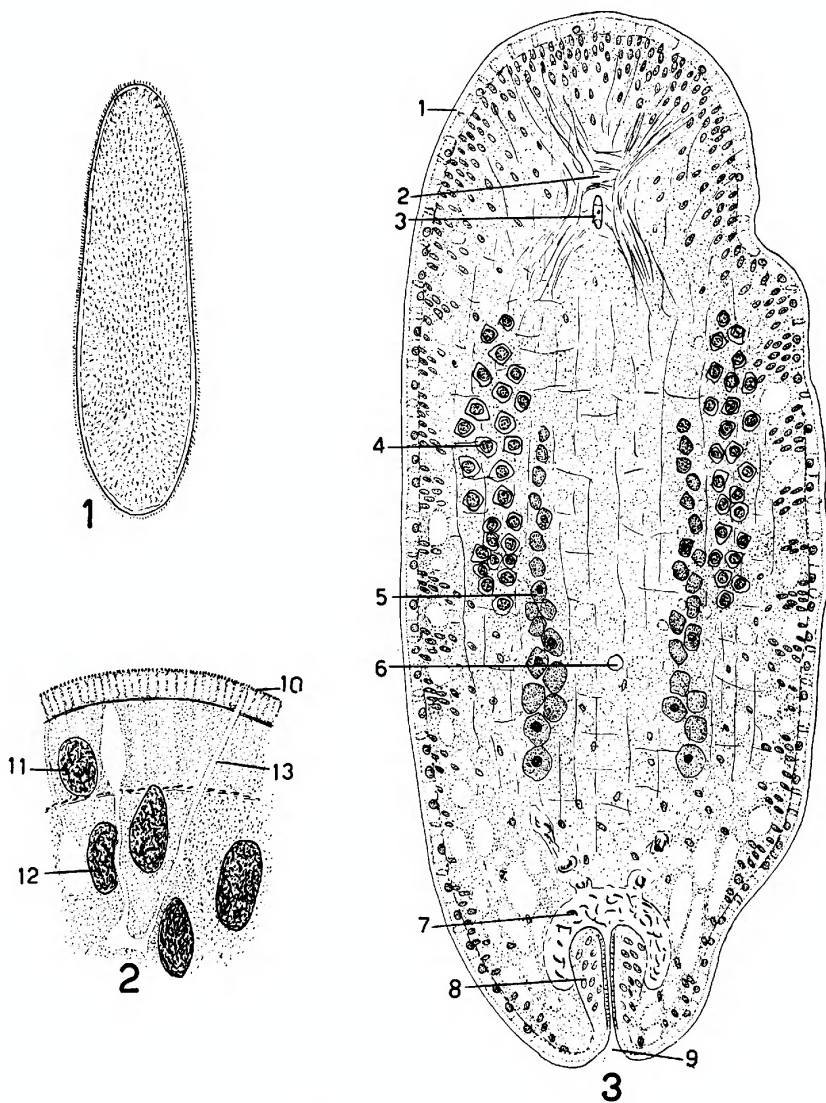


Fig. 1. *Afronta aurantiaca*, from life.

Fig. 2. Anterior epidermis of *Afronta aurantiaca*, showing epidermal channels continuous with mesenchymal spaces.

Fig. 3. Frontal section of *Afronta aurantiaca*, showing general structure and reproductive system

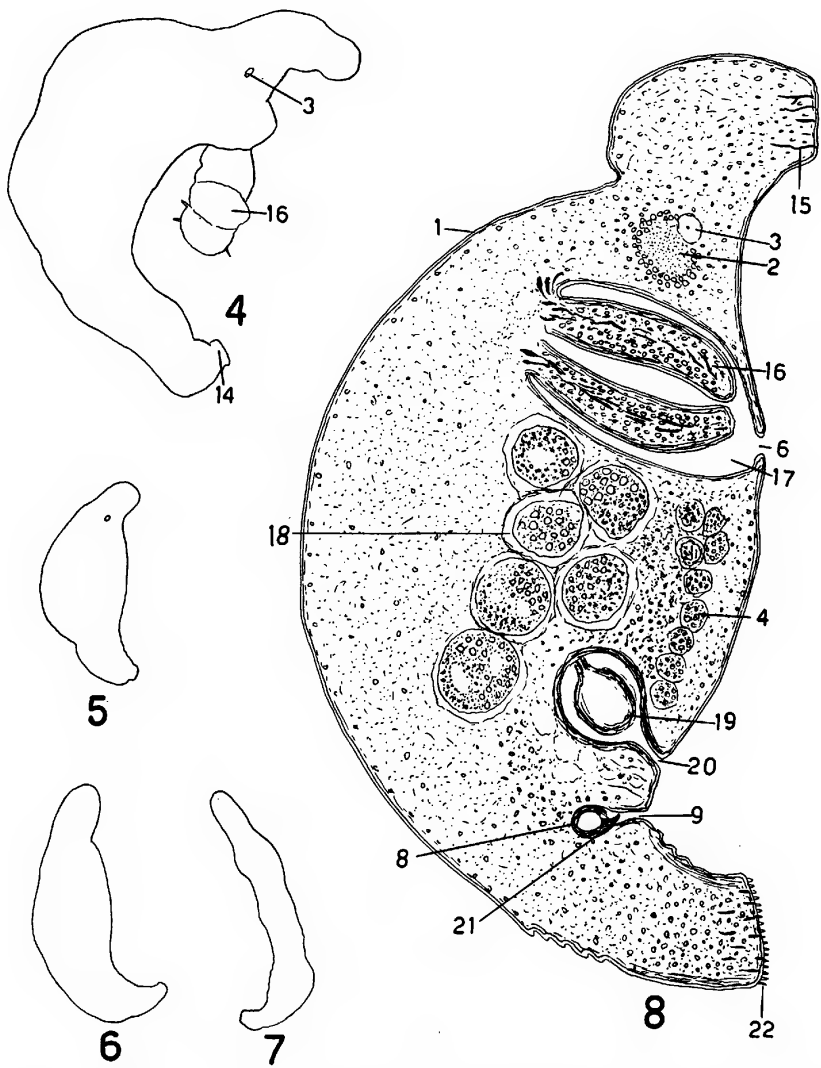


Fig. 4. Side view of *Ectocotyla paguri*, showing general shape and extended pharynx, sketched from life by Dr. E. Reinhard.
Figs. 5-7. Sketches of living specimens of *Ectocotyla paguri* made by Dr. Reinhard: 5, dorsal view; 6, lateral view; 7, worm in act of crawling.
Fig. 8. Sagittal section of *Ectocotyla paguri*, showing general structure, plicate pharynx, reproductive system, and embryos.

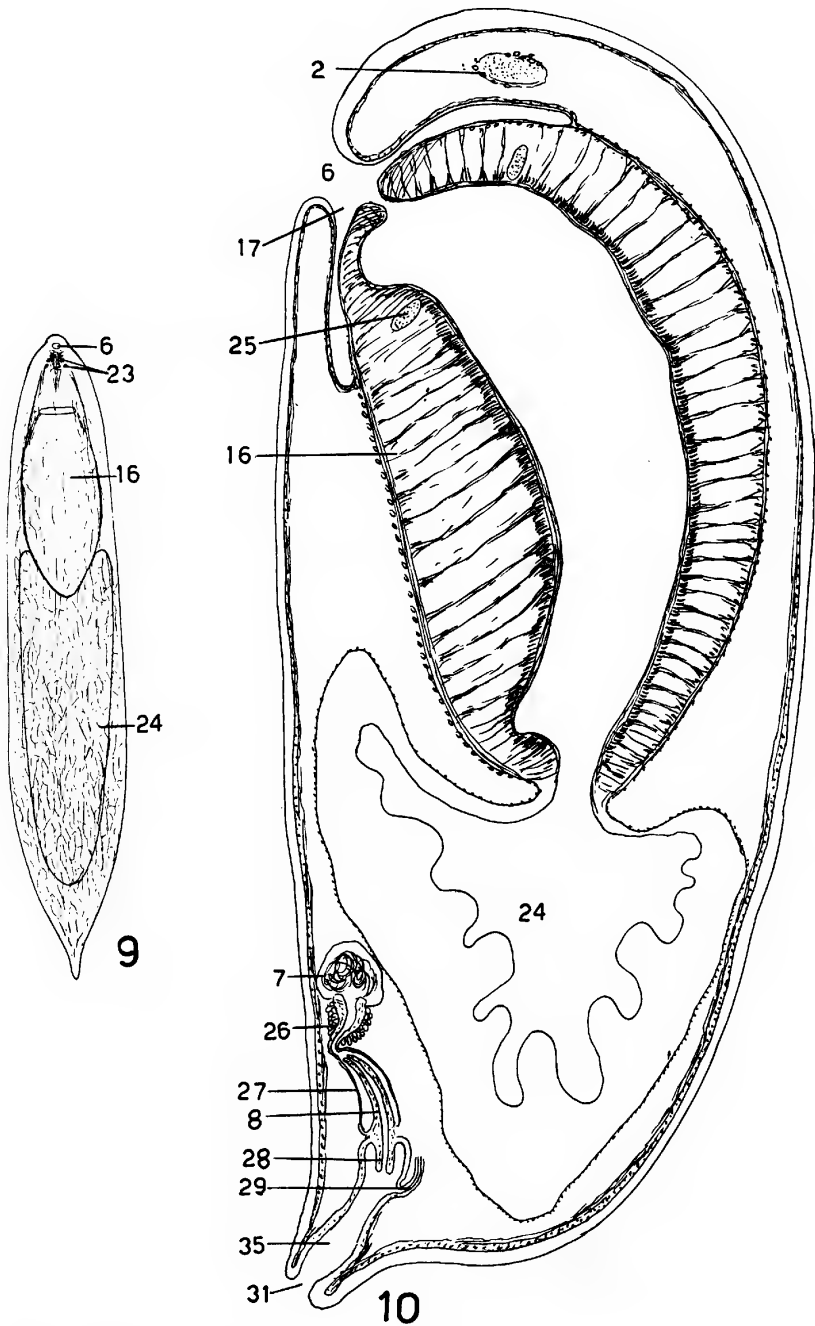


Fig. 9. *Plagiostomum album*, from life.

Fig. 10. Sagittal section of *Plagiostomum album*, showing general structure.

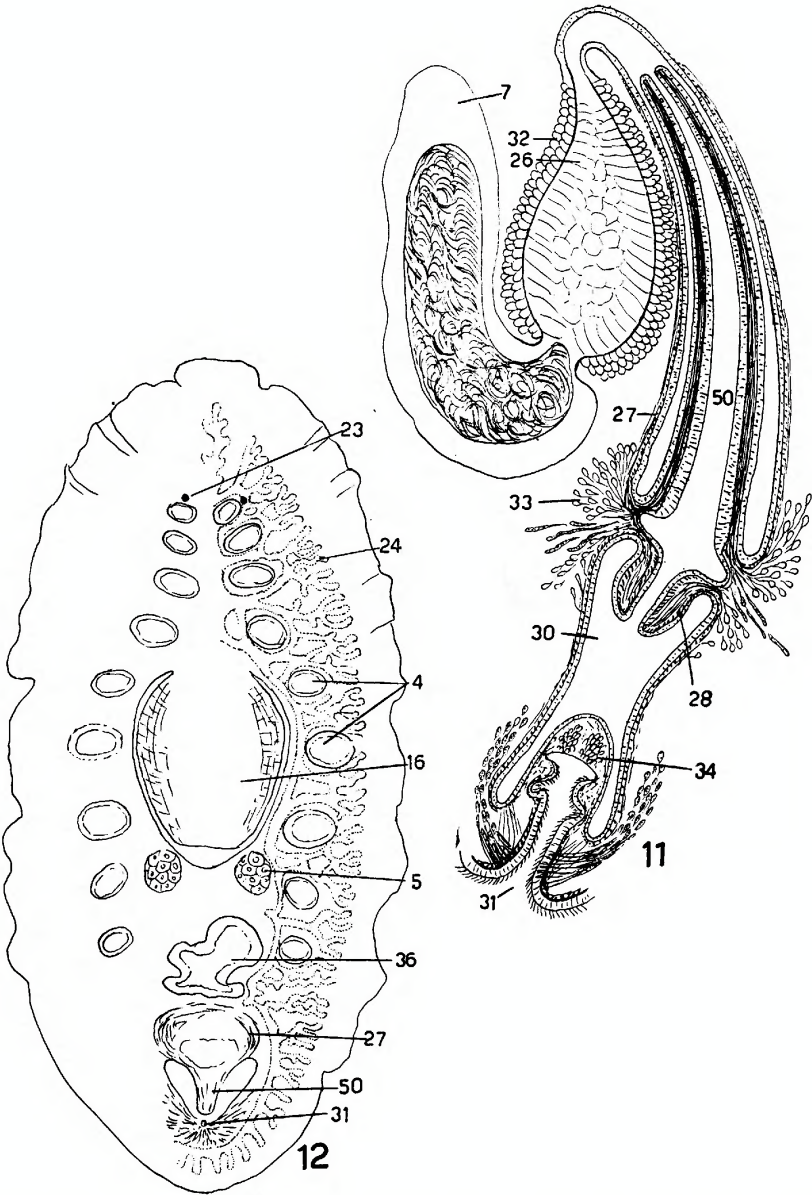


Fig. 11. Frontal view of copulatory apparatus of *Plagiostomum album*, from sections courtesy of Dr. Ulric Dahlgren.

Fig. 12. *Probursa veneris*, from whole mount, courtesy of Dr. Marvin Meyer, showing general structure.

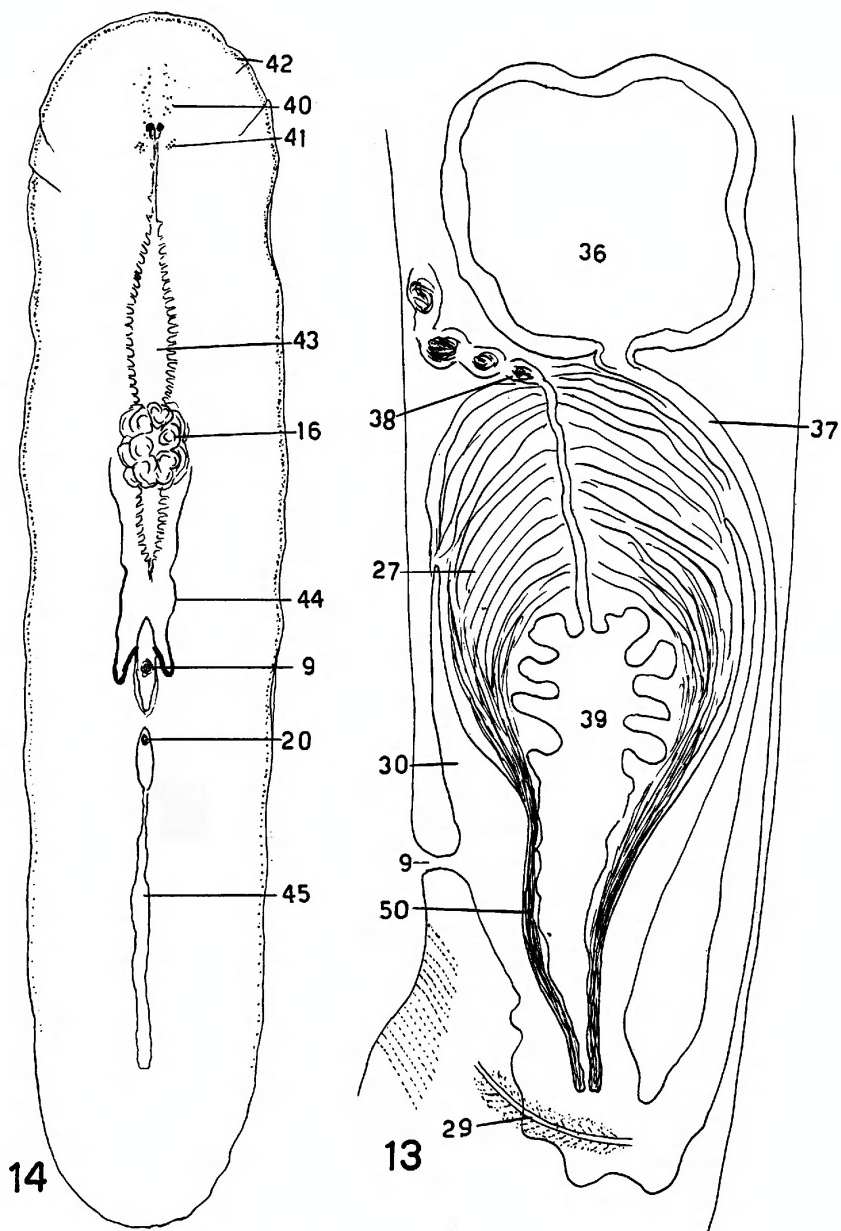


Fig. 13. Sagittal view of the copulatory apparatus of *Probursa veneris*.
 Fig. 14. *Comprostatum insularis*, from whole mount.

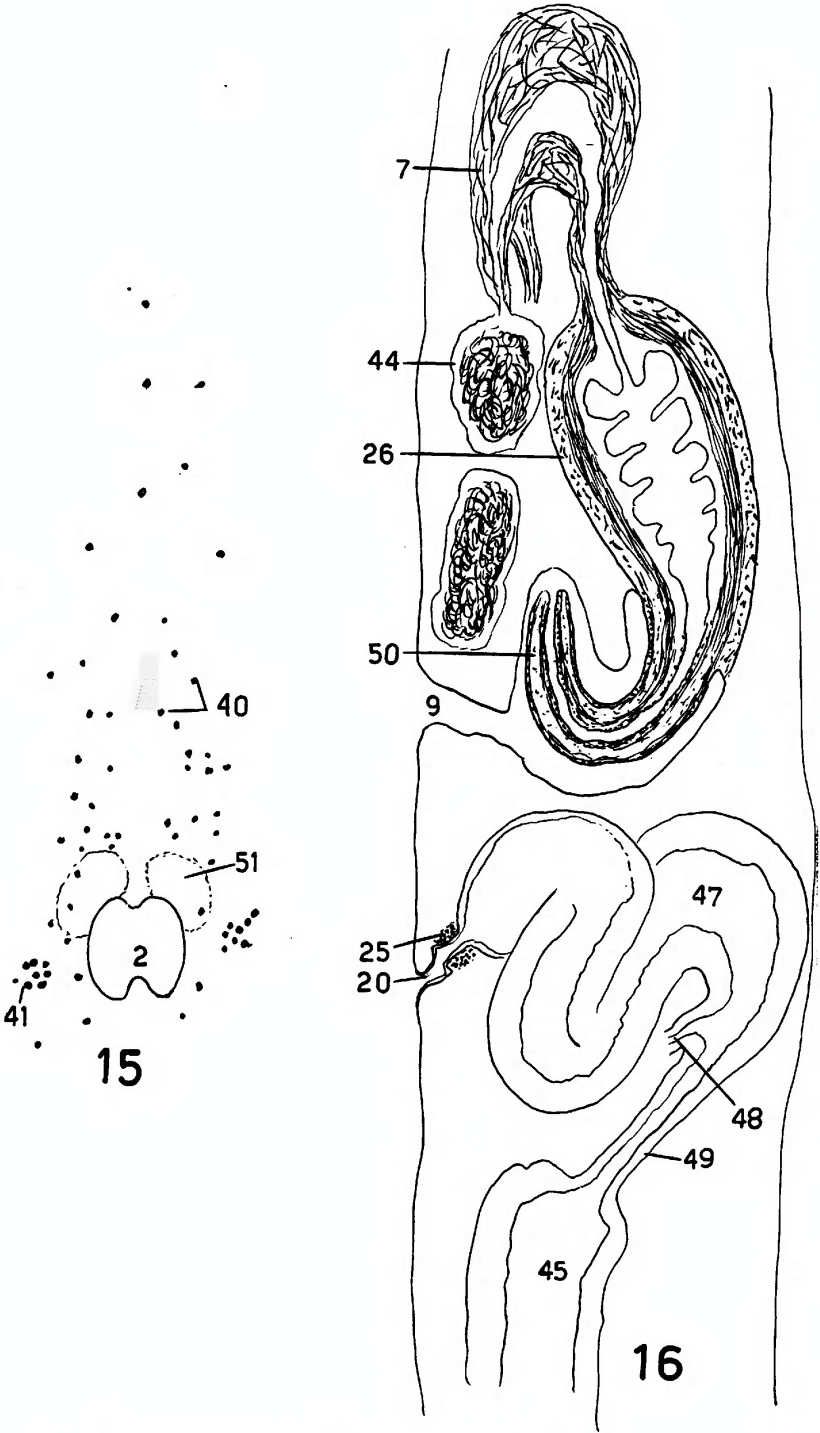


Fig. 15. Eye arrangement of *Comprostatum insularis*.
Fig. 16. Sagittal view of the copulatory apparatus of *Comprostatum veneris*.

